

FACILITIES AND RESOURCES AT THE WYSS INSTITUTE

The Wyss Institute's operations are located in a 50,500 square foot facility, adjacent to the Harvard Medical School Longwood Campus in Boston and in a 13,000 square foot facility adjacent to the Harvard School of Engineering and Applied Sciences in Cambridge (part of the Cambridge facilities will be under renovation till mid 2011). The facilities integrate state-of-the-art equipment needed for the diverse work taking place at the Institute, and as the PI and Co-PI on this grant are Wyss Core Faculty Members, they can access all Wyss equipment, facilities and resources. All staff supported by this grant will be provided with individual desks and wet-benches in one room of the Biomimetic Microsystems Laboratory at our Longwood site. This laboratory is located directly adjacent to Children's Hospital where we will obtain primary human cells for our studies; this close proximity will minimize cell transport time between the operating room and the laboratory.

Laboratories

The facilities include a dedicated BL2 laboratory for bacteria, 4 tissue culture rooms for mammalian cell culture, cold/warm rooms, dedicated general equipment rooms, dedicated facilities for dishwashing, sterile glassware and media preparation, and separate microscopy rooms. In addition to the more standard capabilities such as high speed centrifuges, floor shaker incubators, hybridization ovens, freezers, particle counters, microscopes and chemical hoods, the Institute's facilities include a BD LSR Fortessa flow cytometer, an Agilent Velocity 11 Bravo liquid handling system, a plate reader with top/bottom read capabilities for fluorescence/luminescence in 96/384 and other format plates, quantitative real-time PCR detection systems, GE-AKTA FPLC, an Agilent HPLC and UV-Vis, and 4 open-source Polonators for high-throughput sequencing. Imaging capabilities at the Wyss Institute include a Jeol JEM-1400 Transmission Electron Microscope, a Leica TIRF system, a Zeiss Axio Observer with motorized scanning stage, TFT docking station and definite focus, objectives for light and fluorescent 4-100x imaging. On-stage environmental control is maintained with a BioVision temperature/gas/humidity control chamber. Morphometric analysis and quantification is supported by the MetaMorph software package. Two VWR inverted V037 tissue culture microscopes outfitted with Olympus digital camera are also available for light and fluorescent imaging.

Computers

The Institute's researchers are equipped with desktop and laptop Mac and PC computers. Service and desktop user support services, core IT services (such as storage, data backup and security) and computer services (such as high-performance computing and applications, website and infrastructure servers) are administered by the Harvard Medical School. If needed, supercomputing capabilities (Blue Gene) are available through Harvard University.

Engineering

In addition to molecular biology facilities, the Wyss Institute is equipped with engineering facilities to support work on medical devices, biologically inspired architecture, microfluidic research systems, and other projects at the interface of biology and engineering. Specific engineering resources include two milling centers for machining parts (one Haas 'Super Mini-mill' and one Microlution micromilling machine), a laser-cutter, two 3D printers for parts prototyping, a part-cleaning station, CAD packages (Ansoft, ANSYS, Solidworks, etc), an engineering stockroom, a soldering station, a welding station, prototyping and diagnostic tools (e.g. oscilloscopes), a logic analyzer for examining high-speed digital output, and molding capabilities including an oven suitable for composites, plastics, and silicon.

Office

The laboratory and facilities contain office areas for faculty, as well as meeting and conference rooms to foster research collaboration. The Institute also provides administrative and grant support staff.

Other

FACS sorting on two BD Arias (with UV) is available in adjacent buildings at core centers of Harvard Medical School and the Dana Farber Cancer Institute. Microarray processing is available at core facilities in the Harvard Medical School and at adjacent hospitals. Statistics support is available via consultation with Harvard Medical School.